

THE NAVIGATOR

Inspiring professionalism in marine navigators

FREE



Vessel Traffic Services

How to take the right direction



A free publication by **The Nautical Institute** in association with the **Royal Institute of Navigation**

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The vital nature of VTS

Vessel Traffic Services (VTS) is an essential service provided by a shore authority to help manage ship traffic. It aims to improve safety and security, protect the environment and improve commercial efficiency, particularly in congested areas. Not all ports have a VTS; it is up to the country's government to arrange for this service where, in their opinion, the volume of traffic or the degree of risk requires it under their responsibilities stated in SOLAS.

It is vitally important that VTS provision is harmonised on a global basis so that all ports are consistent and that mariners can feel comfortable using these services wherever they are in the world. This crucial work is carried out by the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA).

VTS is shore-based and the support it provides can range from providing simple information messages, such as the

position of other traffic or meteorological hazard warnings, to extensive traffic organisation within a port or waterway. Many mariners don't recognise that there are three distinct types of VTS service:

- > **INS** – Traffic Information Service ensures essential information is available in time for onboard navigational decision making
- > **TOS** – Traffic Organisation Service prevents dangerous maritime traffic situations from developing and provides for the safe and efficient movement of vessel traffic within the VTS area
- > **NAS** – Navigational Assistance Service assists onboard navigational decision making and monitors its effects.

It is important to recognise that even in an area with NAS, where the VTS is providing decision making assistance, you remain in control of how your vessel moves. Any guidance must be result based – it tells you what the outcome of

your actions should be, but not what to do to get that outcome. For example, the VTS may tell you to make good a course, but not what to steer to make that course good.

VTS operators are maritime professionals trained to a standard set by IALA and agreed by the IMO. As with any exchange between fellow professionals, it is important to understand and observe good etiquette in all communications. This is further explored in the article by Jillian Carson-Jackson on page 6.

As with all issues of *The Navigator*, this edition aims to start conversations for the purpose of professional development. Discuss VTS with your bridge teams and with pilots, and look to the internet for more information, or possibly even visit a VTS centre. Learning more about how to cooperate with VTS will make you a better, safer mariner – and might even open up career options for the future.

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“Should have read *The Navigator!*” Capt Tolga Cetin AFNI and his students at Dokuz Eylul University Maritime Faculty send us this cautionary photograph

Reading your ten points in the February 2018 issue of *The Navigator*, I like point 6. (“The best shiphandlers are the ones who appear to do the least. They let the ship do the work for them.”). Ship berthing is not like car parking. Don’t do too many things too frequently; ahead, astern, again and again. Give her time to move with the water current but remember it’s your duty to assist her in case the wind is strong. Watch carefully as she berths gracefully.

Mahendra Singh
Chief Engineer

I have been sailing as a Chief Officer onboard General Cargo vessels. I have enjoyed reading all of your articles to help me develop my skills and understanding about maritime operations. Especially the issue in which you discuss shiphandling. Thanks, and more power!

Mavis Montecillo
Chief Officer

I started reading the magazine while I was a cadet onboard a container ship. Now I am a qualified junior officer. I have found it very useful during my sea career and

in developing my seamanship skills. I still receive copies of *The Navigator* and I have started sharing them with the young kids in my community who see themselves as captains in the future.

Nodanga Mahaye
South Africa

It has always been a pleasure to come across *The Navigator* magazine, which keeps me glued to it with the interesting information on various aspects of the shipping world. Thanks for enriching my ‘think tank’ and I wish you all the very best for your future editions.

Captain Tauseef Ahmad
Master, M/V MSC Sarah

The Navigator is a must read publication. It keeps all the seafarers and shore personnel around the world updated with significant issues happening in the maritime industry. As a navigator, it keeps me well rounded, reminds me of things I already know and well informed of things I still haven’t discovered. It has always been a pleasure receiving *The Navigator* publication on board our vessel.

Richard Abrigo

We welcome your news, comments and opinions on the topics covered in *The Navigator*. We reserve the right to edit letters for space reasons if necessary. Views expressed by letter contributors do not necessarily reflect those held by The Nautical Institute

KNOW YOUR VTS

Vessel Traffic Services are harmonised around the world – but did you know that there are three different types of service, and how the three compare?



This article is based on a leaflet produced by IALA – AISM, and can be downloaded from <http://www.iala-aism.org/product/brochure-expectations-of-a-vts/>

SERVICES PROVIDED BY THE VTS

Vessel Traffic Service (VTS) differs significantly from routing measures and ship reporting regimes. A VTS is equipped and staffed to interact with marine traffic by providing specific services and to respond to developing situations in the interest of safety and efficiency. A VTS may provide one of three types of service. All VTS provide an Information Service. Traffic Organization and Navigation Assistance Services may be provided where the service is required and can be effectively provided. You can find out which of the services is provided in any given area by checking the Admiralty List of Radio Signals Vol 6 or the Admiralty Sailing Directions. Ports often provide port information which will indicate if VTS is provided, and what services to expect.

Information Service (INS)

All VTS centres provide an Information Service, which receives, processes and shares information about conditions and events important to shipping and safety at sea. VTS endeavours to deliver information that is timely, relevant and accurate. This may include information on:

- > The position, identity or intentions of other vessels in the VTS area
- > Visibility or weather
- > Availability of berths or anchorages
- > Status of aids to navigation
- > Any other information that could affect a vessel's safe transit.

Vessels are provided information at regular broadcast intervals, on request or whenever circumstances so require.

Traffic Organisation System (TOS)

VTS manages space in the waterway. This means VTS may:

- > Allocate arrival or departure times
- > Assign anchorage space
- > Manage traffic in one-way zones
- > Employ other measures related to preplanning vessel movements.

Navigational Assistance Service (NAS)

The VTS can provide positioning or navigation assistance on request, in times of uncertainty or if a vessel's navigation equipment is malfunctioning. Such assistance can also be given if the VTS deems it necessary. In providing navigation assistance, the VTS delivers advice to assist with onboard navigational decision-making.

A Vessel Traffic Service is a service implemented by a Competent Authority, designed to improve safety and efficiency of vessel traffic and to protect the environment. The service should have the capability to interact with traffic and respond to traffic situations developing in the VTS area. *IMO Guideline for Vessel Traffic Services Resolution A.857(20)*

This may include:

- > Bearing and range to a nearby danger or landmark
- > A course to make good to a waypoint
- > Advice on a course to steer
- > Assistance in determining a vessel's position.

Information to assist navigation decision making must be provided in a timely manner. It must be clearly understood by both parties and not open to misinterpretation. It is likely that Message Markers will be used as per IMO Standard Marine Communication Phrases (SMCP). The VTS may ask a vessel to provide additional information so it can properly assess the ability of the vessel to safely participate in NAS.

WHAT SHIPMASTERS CAN EXPECT FROM VTS

A VTS must be properly equipped, staffed, and organised to deliver the services.

VTS Equipment

Mariners can expect that VTS has complete and reliable communications coverage of its area of responsibility. Most VTS use radar and the Automatic Identification System (AIS) in order to detect, identify and monitor vessel movements. Modern VTS employ data processing systems to manage information and produce a reliable and accurate traffic image as the basis on which the VTS operator will base his or her decision-making. The VTS records all communications and activities within range of their sensors.

VTS Personnel

Authorities that provide VTS should train their VTS personnel to high international standards, in line with the types of services being provided. Just as mariners are trained to meet internationally agreed standards, VTS personnel have a similar

training regime. VTS personnel are aware of the demands placed on the bridge team. Mariners should also be aware of the demands placed on the VTS operational team.

VTS Procedures

Most VTS operating procedures have been designed to meet international standards. For example, mariners can expect that VTS personnel are familiar with and, capable of, communicating using the IMO Standard Maritime Communication Phrases (SMCP). However, local conditions may also dictate how the VTS delivers services.

WHAT VTS EXPECTS OF A SHIPMASTER

Co-operation and understanding between the ship and the shore are essential to the safe operation of vessels in a VTS area. Masters are expected to make the best use of VTS in navigational decision making.

Participation

The regulations or instructions setting out the types or classes of vessels that are required or requested to participate in the VTS are identified by the VTS and set out in the Admiralty Sailing Directions. These instructions include the radio frequencies to use in communicating with the VTS and a detailed list of the information to be provided. VTS expects the bridge team to be alert and monitor the VTS frequencies at all times.

Compliance

Vessels operating in a VTS area should acknowledge information from the VTS when asked and respond promptly to inquiries. Shipmasters are expected to adhere to VTS operating procedures and react to all warnings, advice and instructions.

Responsibility

As in any navigation situation, navigators are expected to exercise good seamanship and comply with the Collision Regulations. The authority of the Master is never compromised by participation in a VTS.

More information on VTS may be found in *IMO Resolution A.857(20)*, the *IALA VTS Manual 2016* and *IALA recommendations and guidelines*, available at www.iala-aism

Share the message

Jillian Carson-Jackson FNI FRIN examines the processes behind effective communications between vessels and VTS

Research and experience suggest that a key factor in many shipping accidents is a breakdown in communication. This includes communication within the bridge team, between different areas of the vessel and between the vessel and an external party, such as VTS. Sometimes the breakdown in communication can be due to language difficulties, technology issues or even differences in cultural references.

What is communication?

To communicate is to exchange information, by speaking, writing or some other means.

In VTS there are different aspects to communication:

- > Internal – within the VTS centre;
- > External – between VTS and ships, as well as between VTS and allied services.

There are also different methods which can be used for communication. VHF radio is a key way to communicate with VTS, however, there are a number of others, including phone, e-mail and through AIS.

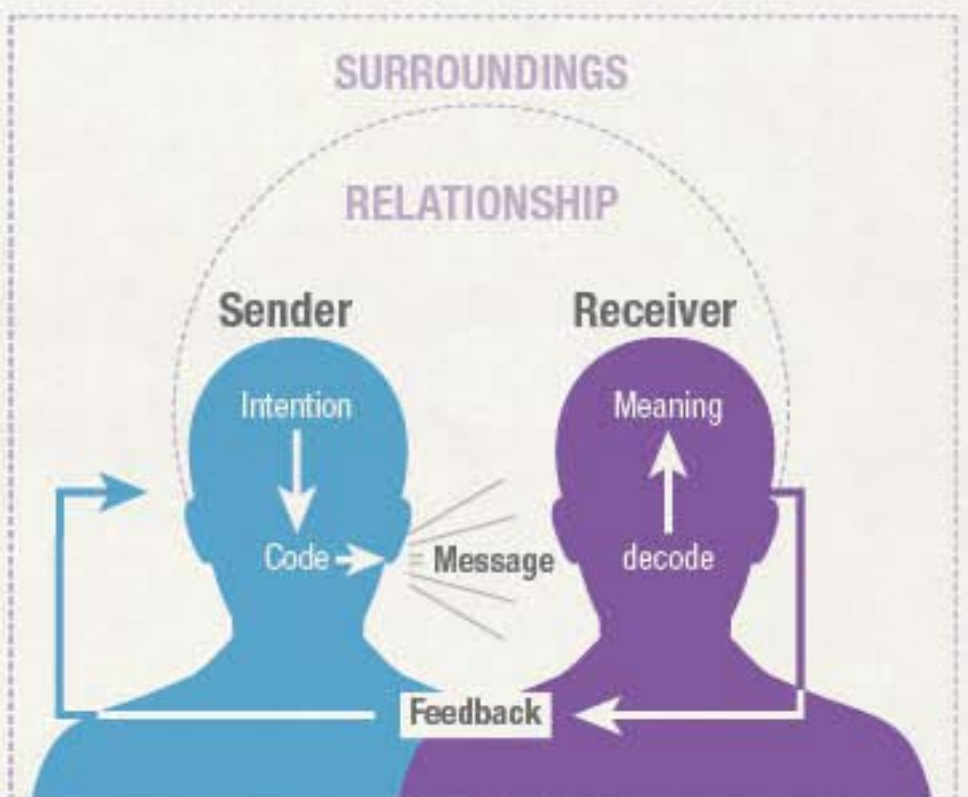
In VTS, information is critical. A core duty of VTS is to collect, analyse and provide information. To do this effectively, structured communication is required from both the sender and the receiver.

Creating a traffic image

Each VTS centre maintains a traffic image. To do this, VTS needs to have information on the vessels in the area. The only way to do this is through communications from and to the vessel. To do this, VTS uses:

- > Radar (which doesn't require the vessel to 'do' anything)
- > AIS (the vessel is required to have a working AIS unit transmitting the correct information)
- > VHF radio voice reports

In addition, the VTS can have an idea of where a vessel is 'supposed' to be



The communication process

through the VTS sailing plan.

The traffic image that VTS maintains is only as good as the information it receives: it is the old story of 'garbage in = garbage out'. If the information transmitted isn't correct, then the VTS will have a flawed traffic image – there will be a breakdown in communication. Alternatively, if the information is accurate, the VTS will have a much more accurate traffic image.

Communicating with VTS

In order to communicate, someone must send a message that includes intentions (what the sender means), which are coded in some manner (words, text, images, etc.) and sent in some way to the receiver. The

receiver must then decode the message and make sense of the meaning.

At each stage of communication something can go wrong. The intention may be miscoded – have you ever said one thing, but really meant something else entirely? The transmission method for the message may be flawed. Think about a time when you tried to listen to a radio station that was a bit too far away, or when you tried to Skype with someone over a poor internet connection. The means to decode the message may not be compatible with the way the message was encoded. A classic example is the speaker mispronouncing a word in a second or third language that you then just can't make out.

EXAMPLE OF A BASIC VTS MESSAGE STRUCTURE

1. Establish contact	(Name of vessel/call sign) This is <i>Name</i> VTS	
2. Exchange information	a. Message marker b. Phrases	See message markers
3. End of message	Over	When expecting a reply
4. End of conversation	Out	When expecting no reply

It is advised that a maximum of two message markers and two phrases are used in one transmission to avoid an overload on the recipient

Using feedback is critical to understanding in such circumstances. Communication doesn't occur in isolation, and there is a backdrop of existing relationships, background noise and your own 'readiness' to receive the message. The diagram opposite is a visual representation of the process of communicating.

Message Markers

The issues around communication exist in all languages. English has been identified as the language to use at sea, but many mariners speak English as a second or third language. Recognising this, the IMO has developed a set of Standard Marine Communication Phrases (SMCP) to help standardise and simplify communication. These include a few key phrases that specifically refer to VTS. In addition, SMCP includes a series of 'Message Markers', or single words that help focus the message. Message markers may be linked with other key words, such as 'Weather INFORMATION' or 'Collision WARNING'. Message markers used by VTS are:

- > Information
- > Warning
- > Advice
- > Instruction
- > Question
- > Answer
- > Request
- > Intention (usually used by a ship not VTS).

Message Structure

The way in which a message is structured can help when it comes to decoding it. A consistent message structure is normally more readily understood, no matter how it is transmitted. There are several steps that can help structure a message to or from VTS effectively:

- > Using standard radio procedure when establishing contact

BROADCAST OF NAVIGATION INFORMATION:

All Stations (x3)
This is Anyport VTS (x3)
Navigation INFORMATION
Anyport buoy #4 reported 4 cables south of charted position.
Anyport VTS
Out

BROADCAST OF NAVIGATION INFORMATION:

Anyship (x2)
This is Anyport VTS (x2)
INFORMATION
Tanker Alpha1 outbound, approach calling in point 3, followed by Ferry Bravo2.
Dredging operations in the vicinity of berth Charlie, REQUEST pass slow speed, no wake.
Anyport VTS
Over.

- > Making effective use of message markers
- > Choosing the appropriate phrase or simple text
- > Ending the message correctly.

The table above presents a sample, basic, message structure for VHF communication with VTS. It is followed by two typical conversations using this structure.

Sending the message

Having looked at the process of communication, the language used and the structure of the message, how should you prepare and transmit a message on VHF radio, phone, or even in person? Here are six key points to follow:

Prepare – write the message down and practise saying it out loud before actually transmitting it. When preparing to send on VHF, take a moment to listen to the frequency and make sure it is free. Only start your message when you are physically and mentally ready.

Tone and Volume – the tone and volume you use when you communicate are just as important as the words that are used. Always remain calm, professional and polite.

Emphasis – what is the focus of the message? VTS operators are taught to emphasise the message markers and key words for further clarity. For example: 'WARNING, SHALLOW water AHEAD of you.'

Speed – the average adult with English as a first language speaks at a speed of between 150 and 190 words per minute. For someone who doesn't speak English as a first language this is way too fast! It is recommended to speak at about 120 words per minute. In emergency situations this should be even slower.

Group and Pause – group words into phrases and add pauses between groups. When you put in pauses on purpose you reduce the likelihood of using fillers such as 'um, hm, uh, er ...'. If you are having a hard time deciding how to group your phrases, a simple rule is to put a pause after every four or five words.

Repeat – when you have a key point in a message, you can repeat it and let people know by saying, '(I) repeat'. Repetition is also useful when there is difficulty somewhere in the communication process.

Receiving the message

When you receive a message, there are some handy tips that can help make sure subsequent communications are effective – both for the ship and the VTSO. Three key points will help you ensure you receive the message correctly:

Listen – really 'listen' and don't interrupt
Clarify – ask questions if you don't understand

Understand – identify the main issues and repeat that back to the sender.

Do not assume what the sender will say, particularly when receiving routine communications.

When you put it all together, you get clear, concise and purposeful communication.

WATCHOUT

In this series, we take a look at maritime accident reports and the lessons that can be learned

Stopping trouble before it starts

While we usually look at cases where things have gone wrong, this time we explore three times where timely intervention from ReefVTS, a coastal VTS that provides navigational assistance service in Australia, has stopped an ongoing incident where a vessel was heading for trouble



The vessel failed to monitor its passage after altering course due to current, and was at risk of grounding on Stagg Patches. ReefVTS contacted the vessel to alert them to the danger. The vessel changed course and the grounding was averted.



The vessel intended to transit through a compulsory pilotage area without a Pilot – and using a passage not recommended for transit. The least charted depth on the passage is four metres, and the draught of the vessel was eight metres. Numerous attempts were made by ReefVTS to contact the vessel without success. Eventually, an aircraft was launched to attempt to draw the vessel's attention and make contact. Only after the aircraft had been launched did the vessel respond to VTS and alter course



Vessel attempted to enter compulsory pilotage area without a Pilot. ReefVTS was able to contact the ship, which then aborted the passage.

All charts and incidents appear with permission from AMSA



If you find our accident reports useful, check out The Nautical Institute's Mariners' Alerting and Reporting Scheme (MARS). A fully searchable database of incident reports and lessons, updated every month. Seen a problem yourself? Email the editor at mars@nautinst.org and help others learn from your experience. All reports are confidential – we will never identify you or your ship.

Keeping it in the family

Port of London Authority VTS Officer **Emma-Louise Negus** was inspired by her father to follow in his footsteps and pursue a life in the marine industry and VTS

What interested you in a career in VTS?

My father worked afloat, followed by a long career in VTS. Through my childhood I grew up hearing about his experiences in the job. When possible, he would take me to visit the operations room and explain to me what he did. I had always thought it was interesting. Growing up, my dad would take me sailing and teach me things along the way, which I really enjoyed. So naturally, I was interested in the marine environment.

What career path led to your current position?

After attending university to complete a degree in an unrelated subject, I applied for a job at the Port of London Authority as a Communications Officer. This role was based in the operations room. It involved inputting voyages into a database and communicating with agents and vessels directly by email and phone. Whilst in this post I managed to gain my RYA Yachtmasters qualification, studying at night school, as well as my RYA Day Skipper practical. After three years in this post I applied for the next available VTS position and was successful.

What are the greatest rewards from your working life?

In my job I enjoy dealing with stakeholders on different levels from the vessels' crew, the public, boatmen and tugs. I feel happy when I'm able to help out and offer information that I have access to. It's good knowing that something you have said or done has made a positive difference to someone else's day or job.

What do you think is the most important VTS-related skill?

I believe it's observation and monitoring of the traffic image, as well as VHF



Name: Emma-Louise Negus

Current position:
VTS Officer, Port of London Authority

Training: V103/1 with V103/3 at South Tyneside College, UK

IT'S GOOD KNOWING
THAT SOMETHING YOU
HAVE SAID OR DONE
HAS MADE A POSITIVE
DIFFERENCE TO
SOMEONE ELSE'S DAY
OR JOB

communications. It doesn't matter whether there is high or low traffic volume, it only takes one vessel for an undesirable situation to occur. It's important to give early and clear information and advice to prevent dangerous situations.

Do you view VTS differently now that you are working in the VTS field?

Yes, definitely. It wasn't apparent before I started training for the role of VTS Officer how much there is to learn and understand, including using the equipment to maintain the optimum traffic image. Before I took on the role I didn't realise the value of information. If relevant and given to a vessel or vessels in a timely and clear manner, it can be the difference between a safe or an unsafe passage. This is not always generally recognised.

What aspects of your role do you wish that mariners knew more about?

Mariners need to be made aware of the whole image that VTS has of the area, including the knowledge and training of the operators and the ways in which we can help. We have a wealth of information in the operations room at our disposal.

What do you think is the greatest challenge facing VTS right now?

Port operations are getting more sophisticated. Ships are larger, under-keel clearances are more critical and the ships' domains are increasingly threatened by the confines of narrow channels. There is an increasing reliance on technology to ensure safe passage. VTS has to pay attention to this in terms of conflicts and critical vessels being impeded whilst on passage plans, as customers expect efficiency.



Comparing the bigger picture

Dr Andy Norris, an active Fellow of The Nautical Institute and the Royal Institute of Navigation, compares VTS and marine communications with the specifics of Air Traffic Control

Comparisons between the air and maritime transport worlds are rarely made. This is probably because their main strengths and weaknesses are so obviously different – but complementary. One exception to this is the comparison between Vessel Traffic Services (VTS) and Air Traffic Control (ATC). Although there are many differences, the concepts are very similar, not least the fundamental reason behind their existence – to help maintain the safety of traffic within a particular area, while making it flow as smoothly and rapidly as possible.

Most air traffic is either entirely or mostly spent on busy routes, and pilots typically have to comply with explicit instructions from ATC operators for the entire flight. This is one of the big differences between ATC and VTS; ships are generally only under guidance from VTS for relatively small portions of their voyage. Another major difference is the level of the guidance given to ships and aircraft. On aircraft, the information provided by ATC can be very detailed, effectively specifying the required altitude, speed and track for the airplane to follow. As a result, some airline pilots cynically consider that navigation is no longer part of their role – they just have to follow the detailed instructions of the ATC operator.

Attention to detail

In the maritime world, VTS concentrates on providing real-time safety information to vessels, rather than requiring them to follow detailed instructions concerning their course, bearing and speed. VTS may provide instructions to vessels, but these must be results-oriented. Unlike the Master and Pilot, the VTS is concerned with the overall safety of the waterway,



**VTS ADVICE NEVER
OVERRIDES THE PRIMARY
FUNCTION OF THE ONBOARD
NAVIGATING TEAM, WHICH
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ALL TIMES. THIS IS EXACTLY
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AIRCRAFT**

rather than that of a specific vessel; that is the affair of the team on board. VTS advice never overrides the primary function of the onboard navigating team, which is to maintain safety at all times. This is exactly the same for ATC and aircraft; even though the advice ATC gives is far more explicit, this advice will not override the authority of the pilot of the aircraft.

One of the reasons why ATC guidance has to be more explicit is because of the difficulty aircraft pilots have in getting good visibility of the local situation in all three dimensions. ATC operators generally have a far better view of the overall situation than the aircraft pilot because of their large and well-sited ground-based radars, with aircraft generally flying well above any obstructing radar clutter.

For the maritime case, depending on the VTS area, the traffic image may include additional information from multiple shore-based AIS and radar stations.

However, some of the information that is available to VTS operators can be less accurate and complete than that which is locally available to the vessel. In particular, some small pleasure craft and other floating hazards may be entirely invisible to VTS. While VTS has a better overall view of the waterway, your onboard radars will generally give a better view of the immediate local situation. Even more importantly, the direct view from the bridge windows will be giving the crew on board a unique insight. AIS information is available to both the vessel and the VTS operator.

Safety first

A more difficult situation for ATC is when the aircraft is manoeuvring on the ground. In this situation, local hazards may not be so clearly visible to the ATC personnel and they rely on the pilot and co-pilot to identify and avoid them. This is more like the maritime situation. Interestingly, the role of air pilots in detecting things by eye in close-to-airport situations has recently become far more important because of the possible presence of drones. These would generally be invisible to ATC operators but are highly dangerous to the safety of the aircraft.

The very much slower speed of ships compared to aircraft and the fact that they are generally all at one level – and not at many different depths – means the current approach to VTS is effective. Consequently, improvements to VTS can be aimed at greater efficiency, supporting port access and environmental protection while maintaining safety.

TAKE TOP 10

This issue of *The Navigator* explores multiple aspects of VTS communications and how to promote best practice

1

End goal

The goal of VTS is to improve safety, security, environmental protection and the commercial efficiency of the port.

2

Relationship matters

The professional relationship with VTS operators is as important as those among the crew onboard.

3

Clear and concise

Clear communication depends on proper use of both technology and language. English may not be a first language, so be as clear and concise as possible, using SMCP where possible.

4

Know your VTS types

There are three types of VTS: INS, TOS and NAV. The sailing directions for the region will tell you which kind of VTS is operating in the area.

5

Information station

INS is an information service only. It may include information on other vessels, visibility or weather, AtoNs, etc.

6

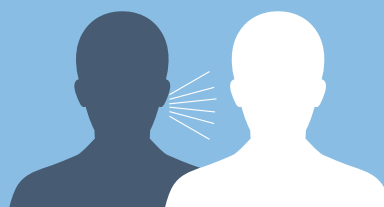
Spatial awareness

TOS is a Traffic Organisation System. It manages space in the waterway, which may include allocating arrival or departure times and assigning anchor spaces.

7

A helping hand

NAS is a Navigation Assistance Service. It can provide results-oriented advice and information to assist in onboard decision making.



8

The eyes have it

VTS has reliable and accurate coverage of the traffic situation in the area – but don't forget to use your own eyes as well!

9

Keep in touch

Vessels operating in a VTS area should acknowledge information and respond promptly to inquiries and warnings.

10

A new career path?

There are international standards for VTS Operator training. Being a VTS Operator could be a career option for mariners.

LIKE OUR TOP 10 TIPS?

Find more in your own language at www.nautinst.org/NavInspire

#NavInspire



WIN AN IPAD

Just post a picture of you with your *Navigator* on Twitter, including the hashtag #NAVsnap, or send us a message on Facebook with your photo attached (www.facebook.com/thenauticalinstitute) and tell us the name of your ship or your college, if you have one. Let us know if you're a member of The Nautical Institute, too (everyone gets entered in the draw, whether you are a member or not!) Or send us the information in an email!

AND THE WINNER THIS ISSUE IS...

Sachin Aswal is currently sailing as an AB on the tanker *MT Luctor* with Transpetrol (Wilhelmsen Ship Management). He writes:

I'm preparing for my exams and I read your magazines on a regular basis. The Navigator is productive and gives a lot of information about life at sea.



Sachin Aswal
NAVIGATOR CHAMPION

UPGRADE YOUR FUTURE



- Are you, or do you support those, in control of sea-going ships?
- Can you keep up with new technology & new regulations?
- Want a direct line to IMO decision making?
- Want to network & improve your job prospects?
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- Want legal defence insurance?

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